

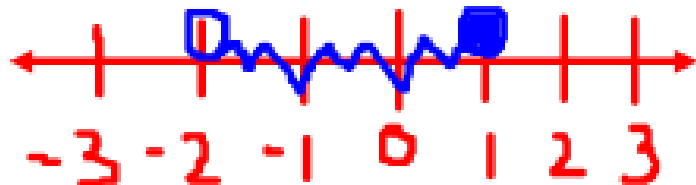
1.6 - Solving and Graphing Compound Inequalities

Compound Inequality: two inequalities joined by "and" or "or"

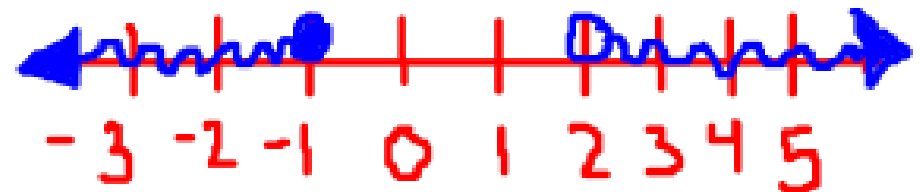
Examples:

$$-2 < x \leq 1$$

$$x > -2 \text{ and } x \leq 1$$



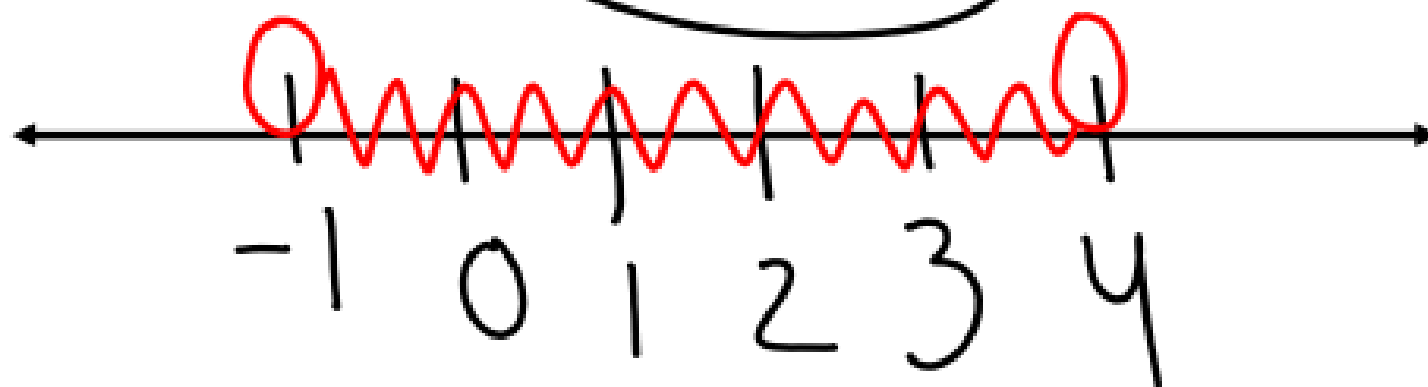
$$x \leq -1 \text{ or } x > 2$$



Ex 1: Solve and Graph: $-5 < 4t - 1 < 15$

$$\begin{array}{rcl} -5 < 4t - 1 & \text{AND} & 4t - 1 < 15 \\ +1 & & +1 \\ \hline -4 < 4t & & 4t < 16 \\ \div 4 & & \div 4 \\ -1 < t & & t < 4 \end{array}$$

$-1 < t < 4$



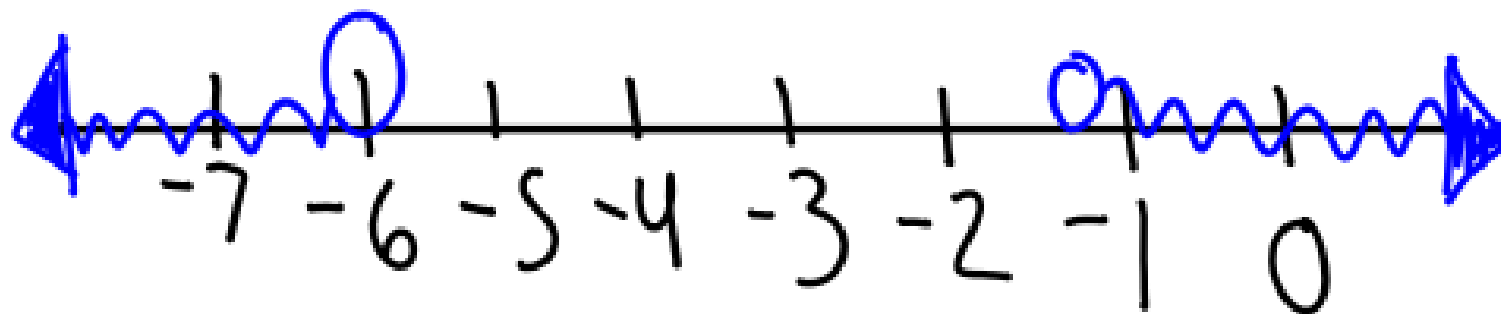
Ex 2: Solve and Graph: $-3x + 7 < 11$ or $-6x - 30 > 6$

$$\begin{array}{r} -3x + 7 < 11 \\ -7 \quad -7 \\ \hline \end{array}$$

$$\begin{array}{r} -3x < 4 \\ -3 \quad -3 \\ \hline \end{array}$$

$$\begin{array}{r} -6x - 30 > 6 \\ +30 \quad +30 \\ \hline -6x > 36 \\ -6 \quad -6 \\ \hline \end{array}$$

$$x > -4/3 \quad \text{OR} \quad x < -6$$



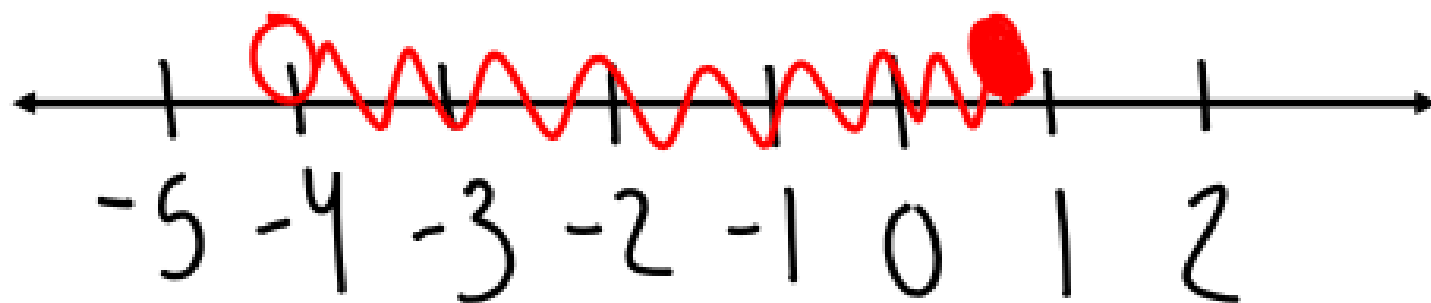
Ex 3: Graph and Solve: $3y \leq -\frac{1}{2}y + 3 < 5$

$$\begin{array}{rcl} 3y & \leq & -\frac{1}{2}y + 3 \\ +\frac{1}{2}y & & +\frac{1}{2}y \\ \hline \cancel{\left(\frac{3}{2}\right)}y & \leq & 3 \left(\frac{2}{2}\right) \\ y & \leq & \frac{6}{2} \\ y & \leq & 3 \end{array}$$

$$\begin{array}{rcl} -\frac{1}{2}y + 3 & < & 5 \\ -3 & & -3 \\ \hline \end{array}$$

$$\begin{array}{rcl} \cancel{(-2)} \cdot \frac{1}{2}y & < & 2 \cdot (-2) \\ y & > & -4 \end{array}$$

$$-4 < y \leq 3$$



Homework: p.46 #37-48